

CLAIMS

1. A short-action firearm having an elongate chamber and bolt assembly comprising a tubular chamber and a bolt, selectively slidable longitudinally in a sliding direction between a retracted unlocked position and an extended locked position, said bolt providing a locked bolt face when said bolt is in said locked position, said chamber having a first end adjacent to said locked bolt face and a second end defined by a case mouth recess sized for operably receiving a cartridge with a projectile, said chamber being capable of withstanding internal gas pressures of at least about 65,000 psi and being sized to matingly engage said cartridge so as to enable said cartridge to fire in said chamber with sufficient propellant to produce an internal gas pressure of at least 50,000 psi and to operably withstand said pressure, said bolt being capable of inserting said cartridge into said chamber, said chamber having a first portion of substantially cylindrical shape adjacent to said first end and a second portion of a narrower substantially cylindrical shape adjacent to said second end, and a shoulder portion interconnecting said first portion and said second portion, said chamber having an overall length measured from said locked bolt face to said second end of said chamber, said first portion having a first portion inner diameter of at least about 0.53 inch at a location where said first portion interconnects with said shoulder portion, said overall length having a ratio to said first portion inner diameter at said location of no more than about 3.5, said first portion having a first portion length extending between said locked bolt face and said shoulder portion, said first portion length having a ratio to said first portion inner diameter at said location of no more than about 3, said chamber being sized for operably receiving

a cartridge free of any protrusion on said cartridge extending radially outwardly beyond said cylindrical shape of said first portion of said chamber.

5 2. The firearm of claim 1, said shoulder portion extending at an angle of less than 40° with respect to a longitudinal axis of said chamber.

10 3. The firearm of claim 2, said shoulder portion extending at an angle of at least 30° with respect to said longitudinal axis.

15 4. The firearm of claim 1, said shoulder portion extending at an angle of about 35° with respect to a longitudinal axis of said chamber.

5. The firearm of claim 1 wherein said first portion length is less than 1.5 inch.

20 6. The firearm of claim 1 wherein said first portion length has a ratio to said first portion inner diameter of no more than about 2.5.

25 7. The firearm of claim 1 wherein said bolt has an extractor sized for operably gripping a rim portion of said cartridge having an outer rim diameter greater than 0.5 inch.

30 8. The firearm of any one of claims 1-7 and 11, including said cartridge cooperatively engaged with said chamber for firing.

35 9. The firearm of any one of claims 1-7 and 11 wherein said bolt has an extractor sized for operably gripping a rim portion of said cartridge having an

outside diameter substantially no less than said first portion inner diameter at said location so as to insure reliable bolt operation of said firearm.

5 10. The firearm of any one of claims 1-7 and 11 wherein said bolt has an extractor adjacent to said bolt face, and a channel oriented transversely to said sliding direction of said bolt through which a rim portion of said cartridge is movable transversely to said
10 sliding direction into gripping engagement by said extractor before said cartridge is inserted into said chamber.

15 11. The firearm of claim 1, said case mouth recess being sized for operably receiving a cartridge with a projectile of a specific diameter within a range from 0.22 to 0.30 inch.

20 12. A short-action firearm having an elongate chamber and bolt assembly comprising a tubular chamber and a bolt, selectively slidable longitudinally in a sliding direction between a retracted unlocked position and an extended locked position, said bolt providing a locked bolt face when said bolt is in said locked
25 position, said chamber having a first end adjacent to said locked bolt face and a second end defined by a case mouth recess sized for operably receiving a cartridge with a projectile, said chamber being capable of withstanding internal gas pressures of at least about
30 65,000 psi and being sized to matingly engage said cartridge so as to enable said cartridge to fire in said chamber with sufficient propellant to produce an internal gas pressure of at least 50,000 psi and to operably
35 withstand said pressure, said bolt being capable of inserting said cartridge into said chamber, said chamber

having a first portion of substantially cylindrical shape adjacent to said first end and a second portion of a narrower substantially cylindrical shape adjacent to said second end, and a shoulder portion interconnecting said first portion and said second portion, said chamber having an overall length measured from said locked bolt face to said second end of said chamber, said first portion having a first portion inner diameter at a location where said first portion interconnects with said shoulder portion, said overall length having a ratio to said first portion inner diameter at said location of no more than about 3.5, said first portion having a first portion length extending between said locked bolt face and said shoulder portion, said first portion length having a ratio to said first portion inner diameter at said location of no more than about 3, said bolt having an extractor sized for operably gripping a rim portion of said cartridge having an outer rim diameter greater than 0.5 inch, said chamber being sized for operably receiving a cartridge free of any protrusion on said cartridge extending radially outwardly beyond said cylindrical shape of said first portion of said chamber.

13. The firearm of claim 12, said shoulder portion extending at an angle of less than 40° with respect to a longitudinal axis of said chamber.

14. The firearm of claim 13, said shoulder portion extending at an angle of at least 30° with respect to said longitudinal axis.

15. The firearm of claim 12, said shoulder portion extending at an angle of about 35° with respect to a longitudinal axis of said chamber.

16. The firearm of claim 12 wherein said first portion length is less than 1.5 inch.

5 17. The firearm of claim 12 wherein said first portion length has a ratio to said first portion inner diameter of no more than about 2.5.

10 18. The firearm of claim 12, said case mouth recess being sized for operably receiving a cartridge with a projectile of a specific diameter within a range from 0.22 to 0.30 inch.

15 19. The firearm of any one of claims 12-18, including said cartridge cooperatively engaged with said chamber for firing.

20 20. The firearm of any one of claims 12-18 wherein said bolt has an extractor sized for operably gripping a rim portion of said cartridge having an outside diameter substantially no less than said first portion inner diameter at said location so as to insure reliable bolt operation of said firearm.

25 21. The firearm of any one of claims 12-18 wherein said bolt has an extractor adjacent to said bolt face, and a channel oriented transversely to said sliding direction of said bolt through which a rim portion of said cartridge is movable transversely to said sliding direction into gripping engagement by said extractor
30 before said cartridge is inserted into said chamber.